

SILICON NANOCRYSTAL CAPACITOR AND PROCESS FOR FORMING SAME

ABSTRACT

A storage capacitor plate for a semiconductor assembly comprising a substantially continuous porous conductive storage plate comprising silicon nanocrystals residing along a surface of a conductive material and along a surface of a coplanar insulative material adjacent the conductive material, a capacitor cell dielectric overlying the silicon nanocrystals and an overlying conductive top plate. The conductive storage plate is formed by a semiconductor fabrication method comprising forming silicon nanocrystals on a surface of a conductive material and on a surface of an insulative material adjacent the conductive material, wherein silicon nanocrystals contain conductive impurities and are adjoined to form a substantially continuous porous conductive layer.